

SUMMARY AND CONCLUSIONS

1. The Albemarle-Pamlico estuarine system is characterized by several features that influence and perhaps, in some cases, govern the distribution of sediments and the processes of sedimentation. The system comprises large, shallow bodies of water that have little or no free connection with the open sea; it has a complicated shoreline geometry with different freshwater sources and orientations relative to prevailing winds; and, it has a low tide range with circulation that is dominated by wind-driven currents.

2. Relative to its size and in terms of its sedimentary and geochemical processes, the Albemarle-Pamlico estuarine system is one of the least studied coastal/estuarine bodies of water in the United States. Although the literature reflects considerable past research effort on sediment grain size and mineralogy, very little is known about sediment dynamics, flux of particulate material, or the role of sediments as a sink for pollutants and a source for regenerated nutrients.

3. The same mechanisms that concentrate fine-grained sediments may also concentrate heavy metals, pesticides, or other toxic substances that are adsorbed onto the surfaces of the sediment particles. Preferential accumulation sites for organic-rich muds may thus be the accumulation sites for these toxic materials, at least until such time as they are released diagenetically or through resuspension.

4. An extensive review of the literature of the APES basins, including the tributary estuaries, has revealed that over 3300 bottom samples have been taken since the mid 1950s; 862 of these were subjected to a sieve, pipette, or hydrometer analysis and the remainder were examined microscopically, through x-ray diffraction analysis, or left unanalyzed. Of the 25 primary literature sources only 6 were journal articles or technical reports; the remaining 19 were M.S. or Ph.D. theses prepared from about the mid 1960s to the mid 1970s.

5. This review shows that sediments in the Albemarle-Pamlico estuarine system are derived from four major sources: river input, shoreline erosion, the continental shelf, and autochthonous biogenic production. A fifth, minor contribution is windblown silt and sand from the dunes of the Outer Banks and from large, periodically unvegetated agricultural fields. Not only is freshwater discharge so low that it would take more than a year for flow volume to equal the volume of the estuarine system, but the discharge of sediments is so low that the Albemarle-Pamlico system receives less sediment in a year than the Mississippi River delivers in 2 days.

6. The most striking features of sediment texture in Currituck, Albemarle, Croatan, Pamlico, and Core Sounds are the overall abundance of fine sand, the simplicity of distributional